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TUBERCULOSIS AND ITS PREVENTION.

By T. Mitchell Prudden, M. D.

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It is commonly neither wise nor necessary for people not professionally concerned to think much about disease, or weigh anxiously the chance or mode of its acquirement. But now and then conditions arise which demand general attention and instruction regarding certain diseases in order that a great threatened or actual calamity may be averted. Such a condition faces the people in all lands to-day in the appalling prevalence of tuberculosis. A disease which in mild or severe form affects at least one-half of the whole of the human race, and which causes the death of full one-seventh of all who pass away, killing about one-third of those who perish between the ages of fifteen and forty-five,—a disease which is most insidious in its onset, and often relentless in its course, and which may be largely prevented,—is one about which we cannot be indifferent, and should not longer be inactive.

For a long time there has been reason for believing that tuberculosis is a communicable disease. Its prevalence in certain families and communities, its frequent occurrence in those who have personally attended upon its victims, its onset in those who have occupied apartments vacated by consumptives—such facts observed over and over again abundantly justify the belief in its communicability.

Until a few years ago the cause of tuberculosis was unknown, and no definite data were at hand which could help us to make a feasible plan for limiting its ravages. But in these later years a great light has been thrown upon this and other kindred diseases.

Most intelligent people are aware that within the past two decades a new field in the domain of life has been opened and widely explored. It has been learned that in earth and air and water there exist countless myriads of living things so minute as to lie far beyond the limits of the unaided vision, and yet in the aggregate so potent in the maintenance of the cycle of life upon the earth that without their activities all life would soon cease to be, and the elements which for a short span fall under the sway of the life forces in all higher animals and plants would lapse finally and irrevocably into their primal state. These tiny organisms are called germs, microbes, or micro-organisms. One great and important group of them belongs among the microscopic plants called bacteria.

These bacteria as a class are so important in the economy of nature because they live for the most part on dead organic material—that is, such material as has once formed a portion of some living thing. Now the world's store of available oxygen, hydrogen, carbon, and nitrogen, out of which all living beings are largely formed, is limited, and if after these have served their temporary uses, as the medium through which that mysterious potency called life alone can find expression, they were not speedily released, new generations of living beings could neither assume nor maintain their place in the great cycle of life. And so these tiny plants, year in, year out, by day and by night, unseen and mostly unheeded, are busy always in making possible the return of each year's visible vegetation and the maintenance of an unbroken succession of generations in man and beast.

Different groups and races among the bacteria have different habitations, and vary widely in their special powers. Complex and powerful as is the aggregate result which they accomplish in the world, the performances of the individual are comparatively simple. They are most liberally endowed with the capacity for multiplication, and each germ acts as a tiny chemical laboratory, taking into itself the organic matter on which it feeds, and resolving it into new compounds. Some of the latter are used in building up and maintaining its own body, while others are given off into the surrounding media.

We are but just beginning to peer in at the mysterious processes which go on under the influence of the bacteria in this underworld of life, and to realize that all the lore which unwearied toilers in the past have gathered in their studies of the visible forms of animals and plants makes but one of the many chapters in nature's story book of life.

But this new and stimulating point of view, toward which the studies of the past decades have led us, does not look so largely into the domain of the practical that it would greatly attract the majority of business- and pleasure- and ennui-ridden mankind were it not for one very significant fact which these recent studies have revealed. This is that among the myriads of altogether beneficent bacteria which people the earth and air and water there are a few forms which have chosen out of all the world as their most congenial residence the bodies of men. But even this would be of only passing interest to most people were it not still further unfortunately true that in the performance of their simple life-processes these man-loving bacteria, feeding on the tissues of their host, and setting free certain subtle poisons in his blood, each after its kind, can induce those disturbances of the body's functions and those changes in its structure which we call disease.

The diseases caused by the growth of germs in the body are called infectious. The germs causing some of the infectious diseases are given off from the bodies of their victims in such form as to be readily transmitted through the air to others, in whom they may incite similar disease. Such diseases are spoken of as readily communicable, though it is not actually the disease itself, but only the germ causing it which is transmitted. In other infectious diseases transmission but rarely occurs. Many infectious diseases are very easily communicated from the sick to the well under unsanitary and uncleanly conditions, which with proper care are very little liable to spread.

I need not here put on parade the whole uncanny list of germ diseases, in which tuberculosis stands foremost, followed by pneumonia, diphtheria, typhoid fever, and the rest. Nor need I call to mind the means by which our growing knowledge in this domain has day by day been laid under tribute for suggestions of hope and safety for the stricken. It is a record of brilliant conquest in nature, and already of far-reaching beneficence to man.

But the great fundamental advance which signalizes the past decade is the lifting of this whole class of fateful germ diseases out of the region of the intangible and mysterious, and their establishment, on the basis of positive experimental research, in the domain of the comprehensible and definite. The things which cause them are no longer for us mysterious emanations from the sick, or incorporate expressions of malign forces against which conjurations or prayers could alone promise protection. But they are particulate beings, never self-engendered, never evolved in the body, always entering from without—things which we can see and handle and kill.

Let us now glance at the germ called the tubercle bacillus, the germ which causes and which alone can cause tuberculosis. It does not exist in the body of men or animals in health. Without the entrance of this particular germ into the human body from without, tuberculosis cannot develop in it. Without the transmission of this germ in some way or other in a living condition from the sick to the well, tuberculosis cannot spread. In the life story of this tiny germ lie both the potency for mischief which we deplore and the secret of our release from its bondage.

The tubercle bacillus is a little colorless rod-like plant, so small that even many thousands of them piled together would make a heap still far too small to be visible to the naked eye. It cannot move about, nor can it grow without moisture, nor at a temperature much above or much below that of the human body. The material on which it feeds must be very nicely adapted to its requirements, and it has no lurking or growing places in nature outside of the bodies of men and a few warm-blooded animals. It can be cultivated artificially in the laboratory, and we know more about its life and peculiarites than about almost any other germ. While it can remain alive in a dried state for many weeks, it is readily killed by heat, by sunlight, and by many of those chemical substances which we call disinfectants. It does not flourish equally well in the bodies of all human beings.

When once it gains lodgment in a body suited to its growth it multiplies slowly, each germ dividing and subdividing, taking from the tissues material for its growth, and returning to them certain subtle poisons which it sets free. The action of the tubercle bacillus is peculiar in that it stimulates the cells of the body, wherever it may lodge and grow, to the formation of little masses of new tissue, which we call tubercles. These tubercles are, as a rule, short-lived, and, if the disease progresses, tend to disintegrate. If the tubercles have grown in such situations as make this possible, as in the intestinal canal or the lungs, the disintegrated and broken-down material, often containing myriads of the living germs, may be cast off from the body. In tuberculosis of the lungs, or consumption, this waste material is thrown off with the sputum. While almost any part of the body may be affected, tuberculosis of the lungs is by far the most common form of the disease.

It follows from what has been said that the only way in which we can acquire tuberculosis is by getting into our bodies tubercle bacilli from tuberculous men or animals. The only animals liable to convey the disease to man are tuberculous cattle, and these through the use of either meat or milk. The danger from the use of uncooked meat or the unboiled milk from tuberculous cattle is real and serious, but it will not be considered here at length, because the great and prevailing danger of infection comes from another source.

Almost as soon as the significance of the tubercle bacillus was established, a series of studies was undertaken on the possibility of the spread of the disease by the breath or exhalations of the persons of consumptives. These studies at once showed that the tubercle bacillus cannot be given off into the air of the breath from the moist surfaces of the mouth and air passages, nor from any material which may come from them while it remains moist, nor from healthy unsoiled surfaces of the body. The establishment of this fact is of far-reaching consequence, because it shows that neither the person nor the breath of the consumptive is a direct source of danger even to his most constant and intimate attendants.

While the discharges from the bowels in persons suffering from tuberculosis of the intestinal tract may contain many living bacilli, the usual mode of disposal of these discharges protects us from any considerable danger from this source.

It is the sputum after its discharge from the body on which our attention must be fixed. While the sputum is moist it can, as a rule, do no harm, unless it should be directly transmitted to those who are well by violent coughing, or sneezing, by the use of uncleansed cooking or eating utensils, by soiled hands, or by such intimate personal contact as kissing or fondling. But if in any way the sputum becomes dried, on floors or walls or bedding, on handkerchiefs or towels, or on the person of the patient, it may soon become disseminated in the air as dust, and can then be breathed into the lungs of exposed persons. This germ-laden material floating in the air may be swallowed, and thus enter the recesses of the body through other portals than the lungs, but these are the most vulnerable and accessible organs.

The wide distribution of tubercle bacilli in the air of living rooms, and in other dusty places where people go, is due partly to the frequency of the disease, and the large numbers of living bacilli which are cast off in the sputum (sometimes millions in a day), and partly to the fact that many of the victims of consumption go about among their fellows for purposes of business or pleasure for months or years. So each consumptive, if not intelligently careful, may year after year be to his fellowmen a source of active and serious and continual infection.

This, then,—the dried uncared-for sputum of those suffering from pulmonary tuberculosis,—is the great source of danger; this the means so long concealed by which a large part of the human race prematurely perishes. Let but this discharged material be rendered harmless or destroyed in all cases before it dries, and the ravages of this scourge would largely cease. This is not a theoretic matter only, for again and again have the living and virulent germs been found clinging to the walls and furniture and bedding and handkerchiefs of consumptive persons, and in the dust of the rooms in which they dwell.

A malady whose victims far outnumber those of all other infectious diseases put together, sparing neither rich nor poor, seizing upon life while it is as yet only a promise, but most inexorable in the fullness of its tide—this malady can be largely prevented by the universal and persistent practice of intelligent cleanliness.

We have learned in the past few years one fact about tuberculosis which is of incalculable comfort to many, and that is that the disease is not hereditary. It is very important that we should understand this, because it seems to contradict a long-prevalent tradition, and a belief still widely and sorrowfully entertained. Bacteria, and especially most disease-producing bacteria, are very sensitive in the matter of growth and proliferation to the conditions under which they are placed, and especially to the material on which they feed. So that a germ which can induce serious disease in one species of animal is harmless in the body of a different though closely allied form. More than this, different individuals of the same species, or the same individual at different times, may have the most marked differences in susceptibility in the presence of disease-producing germs. What this subtle difference is we do not know. Whether the body at one time affords a congenial soil to the invading germs and at another does not; whether its marvelous and complex powers of resisting the virulent tendencies of disease-producing bacteria at one period or in one individual are more vigorous than in another and vary at different times, we do not certainly know. This, however, we do know, that certain individuals are more likely than others to yield to the incursions of the tubercle bacillus. This vulnerability in the presence of invading germs we call susceptibility, and susceptibility to the action of the tubercle bacillus is hereditary.

It is not the disease, tuberculosis, which comes into the world with certain individuals or with successive children of the same family, but the aptitude to contract it should external conditions favor.

However much the child of tuberculous parents or a member of a tuberculous family may be predisposed to the disease, he cannot acquire tuberculosis unless by some mischance the fateful germ enters his body from without. What has been regarded through all these years as the strongest proof of the hereditary transmission of tuberculosis—namely, the occurrence of the disease in several members of the same household—is, in the new light, simply the result of household infection—the breathing of air peculiarly liable to contain the noxious germs, or their entrance in some other way into the bodies of persons especially sensitive to their presence.

I do not mean to imply that under no conditions can the tubercle bacillus be transmitted from the mother to the child before its birth. In a few instances this is believed to have happened. But its occurrence is so extremely infrequent that it may be regarded as accidental, and of no serious importance from our present point of view.

But it will perhaps be said: "If the tubercle bacilli are so widely diffused, why do we not all acquire tuberculosis, and why was the world not long since depopulated?" In order to explain this matter I must ask the reader to look with me for a moment at some of the body's natural safeguards against bacterial and other invaders from the air.

It has been found that a person breathing in germ- and dust-laden air through the nose breathes out again air which is both dust- and germ-free. The air passages of the nose are tortuous, and lined with a moist membrane, against which the air impinges in its passage. On these moist surfaces most of the solid suspended particles, the germs among them, are caught and held fast, and may be thrown off again in the secretion. In breathing through the mouth this safeguard is not utilized. Again, the upper air passages leading to the lungs are lined with a delicate membrane of cells, whose free surfaces are thickly beset with tiny hairlike projections. These projections are constantly moving back and forth with a quick sweep, in such a way that they carry small particles which may have escaped the barriers above, up into the mouth, from which they may be readily discharged. In this way much of the evil of breathing dust- and germ-laden air is averted. But in spite of these natural safeguards a great deal of foreign material, under the ordinary conditions of life in-doors or in dusty places, does find lodgment in the delicate recesses of the lungs. The body tolerates a good deal of the deleterious material, but its overtasked toleration fails at last, when serious disease may ensue.

When ordinary forms of living bacteria get into the tissues of the body, a very complex cellular mechanism, not fully understood, usually leads to their destruction and ultimate removal. In the presence of the tubercle bacillus the body cells are often able to build a dense enclosing wall around the affected region, shutting it off from the rest of the body. This is one of the modes of natural cure.

The body cells are sometimes able, if sustained by nourishing food and an abundance of fresh air, to carry on, year after year, a successful struggle with the invading germs, so that the usefulness and enjoyment of life are but little interfered with. Finally, a certain proportion of human beings seem to be endowed at birth with some as yet unknown quality in the cells or fluids of the body which naturally unfits them for the life uses of the tubercle bacillus, and so renders the individual for longer or shorter periods practically immune. Others, on the contrary, are, as we have seen, from birth unusually susceptible.

This inherited susceptibility to the incursions of the tubercle bacillus, should this find lodgment in the body from without, by no means always reveals itself in any apparent lack of vigor or robustness of the body. Still, any habit or mode of life which diminishes the bodily vigor, whether in those predisposed to this malady or in the apparently immune, and gives it a leaning toward disease, diminishes, as a rule, the chances of a successful contest with the bacillus.

This it is that in spite of the wide distribution of these fateful germs in frequented places, and the tendency of certain vulnerable persons to succumb to their ravages, so many people are not affected by them, and so many, although not altogether escaping their malign influence, are yet able to wrest at least a moiety of life from the hands of the great destroyer.

The degree of success which may attend our crusade against tuberculosis will largely depend upon the wide diffusion of the knowledge of its communicability by means of the sputum, dried and powdered and floating in the air as dust, and the intelligent persistence with which the peccant material may be safely cared for at its sources.

The resolute avoidance by consumptives of the not only filthy but dangerous practice of spitting upon floors or streets, or anywhere else except into proper receptacles; the use of receptacles which may be and are frequently and thoroughly cleaned, and, best of all, water-proof paper cups, which with their contents may be burned; or, when circumstances require, the receiving of the dangerous material on cloths or Japanese paper napkins, which may be destroyed by fire, and not on more valuable handkerchiefs on which the sputum is allowed to dry while in use or before disinfection and washing; scrupulous care by others of the sputum of those too ill to care for it themselves—these are the comparatively simple means from which we may most confidently expect relief. The details of these precautions and their adaptation to the special circumstances of those suffering from tuberculosis can most wisely be left to the physician, and, though of paramount importance, need not further engage our attention here.

To the consumptive himself these measures are not without a vital significance. For his chances of recovery may be diminished in no small degree if he be more or less constantly liable to a fresh infection from material which he has once got rid of, and which should have been destroyed.

The great volumes of fresh moving air which we encounter out-of-doors in properly cleansed streets usually so greatly dilute the dust, of whatever kind, that little apprehension need be felt from its presence. When, however in crowded cities, the streets are filthy, and but fitfully cared for; when choking dust clouds must be encountered by the citizen in the haphazard and slatternly essays at cleaning which untrained, irresponsible, or decrepit attaches of vicious administrations may deign to make—we cannot ignore a danger from street dust which may well incite the gravest apprehension. The citizen can, if he must, avoid a block on which the hand-sweepers, in utter disregard of rules, ply their nefarious brooms over unwet surfaces, because too indolent or indifferent to sprinkle them—this he can do if he be not willing or ready to apply the citizen's remedy for municipal misrule.

But it is in rooms either of dwelling or assembling places that the ill effects of infectious dust are most potent, because the air is here not so constantly renewed as it is out-of-doors, and is liable to be breathed over and over again. Dust which gets into houses does not readily leave them unless special and intelligent means be directed to its removal. We do not usually realize that though the air itself in inhabited rooms is constantly changing more or less rapidly by diffusion, by draughts, or by purposed ventilation, fine dust particles are not removed under the same influences in proportionate degree. They cling more or less tenaciously to all surfaces on which they have settled, and especially to fabrics, so that currents of abundant force and sufficient distribution to change the air may and usually do leave the lodged dust particles almost entirely undisturbed.

One of the most threatening tendencies of modern times in matters of health is to overcrowding in cities. The great element of danger from this overcrowding is not only the insufficiency of air in living rooms, and the lack of ready means for its renewal, but the accumulation in this air of infectious germs floating with the dust. Abundant water supply and good sewerage have rendered possible and measurably safe, so far as the ordinary waste of life is concerned, the building of vast tenements which swarm with people. But the means of getting pure air, and especially of disposing of infectious material often floating in it when it is confined, have not at all kept pace with the demands of health and cleanliness.

But when we turn to the larger and more liberally furnished dwellings of the well-to-do classes, we do not find everything reassuring from the standpoint of hygiene, for in some respects the rich are sadly handicapped by the "tyranny of things." Of course long- and thick-piled carpets afford persistent lurking places for infectious as well as other dust. Certainly heavy hangings in a measure hinder the purifying action of the sunlight, shut the used air in and the fresh air out, and shelter floating matter which might otherwise escape. Without doubt complex upholstery with roughened fabrics increases the difficulties in the maintenance of cleanliness. But the usage of the householder in these matters will, after all, depend upon whether his practical devotion be most at Fashion's or Hygeia's shrine. We well may long for the coming of a time when clean, airy, simply furnished living rooms shall replace the stuffy fabric-strewn apartments in which the fashionable citizen so much delights to-day.

In one particular, however, the devotee to cleanliness may be unreservedly insistent, and that is that in the cleaning of living rooms, whether occupied by the sick or the well, the distinct and recognized purpose of the operation shall be to remove, and not simply stir up, the over-gathering dust.

The past few years, so beneficently signalized by the revelations of the new germ lore, have seen marked departures from the traditional sweepings and dustings of a past era; and the emancipation of the housekeeper, and incidentally of the household, from the thrall of the pestiferous feather duster seems fairly under way. Still, some of the old barbarous travesties upon cleaning widely persist. The dry broom still seeks out in the deep recesses of the carpets not the coarser particles of dirt alone, but the hordes of living germs which were for the time safely ensconced; and among these what malignant forms the chances of the day may have mingled. These are all set awhirl in the air; some gather on salient points of the fittings and furnishings; many stay with the operator, to vex for hours the delicate breathing passages or the deeper recesses of the lungs. Then in the lull which follows gravity reasserts its sway, and the myriad particles, both the living and the dead, slowly settle to the horizontal surface, especially to the carpets. Then the feather duster comes upon the scene, and another cyclone befalls. The result of it all is that the dust has finally been forced to abandon more or less completely the smooth and shining surfaces where it would be visible, and is largely caught in the surface roughnesses of the carpets or upholstery or hangings, ready at the lightest footfall or the chariest touch to dance into the air again, and be taken into the lungs of the victims of the prevailing delusion—the delusion that the way to care for always noxious and offensive and often dangerous dust is not to get it out of the house, but to keep it stirring in the air until at last it has settled where it does not vex the eye.

By the use of moist tea leaves in the sweeping of carpets, by the use of soft-textured fabrics, frequently shaken out-of-doors, or by moist cloths or chamois in dusting, much useless dust scattering may be avoided. But no matter what the means employed, the final purpose of every household cleaning should be to get the dust, not afloat, but away.

Probably the most serious source of infection which one is liable to encounter in the usual ways of life is the occupancy at hotels of bedrooms vacated by consumptives without subsequent efficient disinfection and cleansing, and travel in sleeping cars. I need not enter here into the harrowing details of desperate uncleanness which the ordinary railway travel brings to light. It is to be hoped that popular demand for reform in the routine of hotel keepers and railroad managers in the matter of ordinary sweeping and dusting, and in the precautions against the spread of tuberculosis, may soon usher in among them a day of reasonable sanitary intelligence.

A belief in the communicability of tuberculosis is becoming widely diffused, and it would seem to be desirable, on the ground of policy alone, for the managers of summer, and especially of winter, resorts frequented by consumptives, to let it be known in no uncertain way that their precautions against the spread of infectious diseases are effectually in line with the demands of modern sanitary science.

The members of families bearing a hereditary susceptibility to the acquirement of tuberculosis should strive to foster those conditions which favor a healthy, vigorous life, in occupation, food, exercise, and amusement, and remember that for them more than for others it is important to avoid such occupations and places as favor the distribution, in the air or otherwise, of the tubercle bacillus.

But when the individual has done what he can in making his surroundings clean, and in thus limiting the spread of the tubercle bacillus, there still remains work for municipal and state and national authorities in diffusing the necessary knowledge of the disease and its modes of prevention; in directly caring for those unable to care for themselves; in securing for all, such freedom from contact with sources of the disease as the dictates of science and humanity may require and the law permit.

To health boards, either national or local, must largely be intrusted the primary protection of the people against the danger from tuberculous cattle.

A national bureau of health might be of incalculable service in stimulating and harmonizing efforts made for the suppression of tuberculosis in various parts of the land, and in fostering research in lines which promise large practical return in the saving of life.

The United States has been keenly alive to the economic importance of certain diseases of cattle, and has done much to suppress among them various infectious maladies. But the most positive official relationship which the United States has thus far borne to this communicable and preventable disease of man which robs it each year of hundreds of thousands of its citizens, has been to place and maintain a heavy tax upon instruments and apparatus necessary for the recognition and study of tuberculosis and many other bacterial diseases, and, except recently and for a favored few, upon books in which, and in which alone, can be found records of research upon which the means for the prevention of tuberculosis must be based.

Tuberculosis in this country has been officially almost entirely ignored in those practical measures which health boards universally recognize as efficient in the suppression of this class of maladies.* Physicians are now required to report it to the local health boards in but few cities. Systematic measures of disinfection are rarely practiced. But the official measures just mentioned have been found extremely useful in the limitation of other communicable diseases. While consumption is a communicable germ disease, it is, in fact, in the light of our present knowledge, when intelligently cared for, so little liable to spread that it is properly exempt from those summary measures which health authorities are justified in adopting with the more readily and less avoidably communicable maladies which we call contagious. Consumption is apt to involve such prolonged illness, and so often permits affected persons for months and years to go about their usual avocations, that general isolation would be both impracticable and inhumane. Moreover, for reasons which it is hoped are evident to the reader, isolation among those capable of caring for themselves is at present entirely unnecessary.

But while extreme measures are not called for, local health boards must soon act in the prevention of tuberculosis. For the present the wisest course would seem to be to attempt to secure the desired ends rather by instruction, counsel, and help than by direct and summary procedures.

Thanks largely to the persistent efforts of Dr. H. M. Biggs through many discouraging years, the city of New York stands foremost to-day among municipalities, great or small, the world over, in its intelligent and systematic official efforts to suppress the ravages of tuberculosis. But the task is difficult, advance is slow, and the facilities at hand are utterly inadequate.

There is no more pitiable spectacle in this land to-day than that of the hundreds of victims of advanced tuberculosis in every large town who cannot be comfortably or safely cared for in the dwellings of the poor, and yet who are always unwelcome applicants at most of our hospitals, and at many are denied admission altogether. They are victims of ignorance and of vicious social and hygienic conditions for which they are not largely responsible, and states and municipalities, which are more to blame, owe them at least a shelter and a place to die. Unquestionably one of the urgent duties immediately before us in all parts of the land where tuberculosis prevails is the establishment of special hospitals in which this disease can be treated and its victims safely cared for.

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*In this state every physician is required by law to report every case, within one week after coming under his observation, to the secretary of the State Board of Health.

And now at last remains to be spoken what word of cheer and hope our new outlooks may have given us for those who are already under the shadow of this sorrowful affliction. The dreams and aspirations and strenuous labors of the students of this disease have looked steadily toward the discovery of some definite and positive means of cure, but as yet full success lingers beyond their grasp. The methods for the early detection of tuberculosis which science has pointed out make it possible for affected persons to plan such modes of life and early seek such salubrious climates as promise a hope of recovery. We have studied closely the ways in which the cells of the body often successfully resist the incursions of the already seated germs, and learned how in many ways the natural forces of cure may be sustained and strengthened. We have learned much about certain complicating occurences which often form the most serious features in the progress of tuberculosis of the lungs, and how they may be best avoided. And so to-day the outlook for those in the earlier stages of this disease is in a considerable proportion of cases extremely encouraging. It is no longer for us the hopeless malady which it was earlier believed to be. It is not necessarily a bitter losing fight upon which one enters who becomes aware that the finger of this disease is upon him. A long and happy and useful life may still be his if the conditions which favor his cure be early and intelligently fixed upon, and patiently and faithfully persisted in. The wise physician is here the best adviser in climate and regimen, as well as in the proper selection of remedial measures, and the earlier his counsel is sought and acted on, the brighter will usually be the outlook for recovery.

The great and beneficent work which has been accomplished by Trudeau in the Adirondack woods, in at once widening the bounds of knowledge of tuberculosis and in carrying to a successful issue in so many the varied and delicate processes of cure, is a cheering example of what may be accomplished by the light of our new knowledge, in mastering a malady so long considered hopeless.

NUISANCES, WHAT THEY ARE, AND HOW HEALTH OFFICERS AND LOCAL BOARDS OF HEALTH SHALL DEAL WITH THEM.

By A. C. Bailey, Randolph, Vt.

General Definition.—The term nuisance, in legal phraseology, is applied to that class of wrongs that arise from the unreasonable, unwarrantable, or unlawful use by a person of his own property, real or personal, or from his own improper, indecent, or unlawful personal conduct, working an obstruction of or injury to a right of another or of the public, and producing such material annoyance, inconvenience, discomfort, or hurt, that the law will presume a consequent damage.

Public Nuisances.—Public or common nuisances affect the community at large, or some considerable portion of it, such as the inhabitants of a town; and the person therein offending is liable to criminal prosecution. A public nuisance does not necessarily create a civil cause of action for any person; but it may do so under certain conditions. A private nuisance affects only one person or a determinate number of persons, and is the ground of civil proceedings only. Generally it affects the control, use, or enjoyment of immovable property; but this is not a necessary element according to the modern view of the law. A nuisance, to be a public nuisance, must be in a public place, or where the public frequently congregate, or where members of the public are likely to come within the range of its influence; but the mere fact that the act or use of property is unpleasant to the public or renders property in the vicinity less valuable will not alone be sufficient invasion of a public right to constitute it a public nuisance. Provided the act or use of property be not in itself illegal, the law will not, for slight cause, interfere with the business or actions of any man. To constitute a public nuisance, there must be a substantial injury to the public at large.

Private Nuisances.—A private nuisance, of the sort which is redressed at the suit of the party, is anything done on one's premises or elsewhere, or put into circulation, or omitted to be done contrary to a legal duty, wherefrom, through the separate action of nature or of the common course of events, an injury follows to or directly menaces another; or, it is any indictible nuisance which has wrought a special harm to the individual. The conception of private nuisance was formerly limited to injuries done to a man's freehold by a neighbor's acts, of which stopping or narrowing rights of way and flooding land by division of water courses appears to have been the chief species. In the modern authorities it includes all injuries to an owner or occupier in the enjoyment of the property of which he is in possession, without regard to the quality of the tenure. The ways in which this may be done are indefinite in number, but fall, for practical purposes, into certain well recognized classes.

A public nuisance may be a private nuisance as well, when viewed in its relations to an individual specially injured by it. Nuisances having such double relation are denominated by Mr. Wood as mixed nuisances. Whether a thing is or is not a nuisance does not depend on the notions of people living in a designated locality. "Wood's Law of Nuisances." What amount of annoyance or inconvenience will constitute a nuisance cannot be precisely defined, being a question of degree depending on varying circumstances. "Abbott's Law Dictionary."

Urinating in a spring, near a public highway, from which travelers are accustomed to drink, was held an indictable nuisance, as was selling unwholesome provisions not fit to be eaten by man. The draining of school privies into a brook flowing through a village was held to be a public nuisance. "Decision by Hanks."

A brew house and sty for swine are common or public nuisances when set up in such inconvenient parts of a town that they necessarily incommode the neighborhood. Thus an act or use of property may be a public nuisance on a city street, but not on a country road, such as keeping swine. "Ray vs. Lynes."

In the United States the courts have held that a blacksmith's shop, a tannery, a livery stable, a slaughter house, a wagon loaded with matter that emits an offensive odor, a brick kiln, or the pursuit of noxious trades, among other things are not *per se* nuisances, but are to be considered a common or public nuisance by reason of their location, while in and of themselves they are not. Even what is a nuisance *per se* may be carried on in a remote part of a town or locality so as to be no common nuisance or annoyance to the public. And, on the other hand, what is not a nuisance *per se,* such a trade as has been harmlessly and beneficially carried on for years in a particular locality, may become a public nuisance without any change in the way it is conducted, by reason of public streets being laid out near it, or numerous dwellings erected in its vicinity, so that it becomes a serious annoyance. The variety of things, acts and omissions which may constitute a nuisance is so great as to render an enumeration impossible, no particular combination of sources of annoyance being necessary to constitute a nuisance, and the possible sources of annoyances not being exhaustively defined by any rule of law. Noise, smoke, dust, vapors, stenches, pigsties, cattle yards, barns, collections of stagnant water, and various other things of a like sort, under certain circumstances and conditions, constitute a nuisance. So a privy or cesspool is *prima facia* a nuisance, and is liable to be adjudged such unless so arranged as not to constitute an annoyance by reason of the escape of smells or of matter on neighboring premises, or to the corruption of wells and springs. The remedies for nuisances are threefold: preventive, compensatory, and punitive. The first divides itself again into the remedy by abatement, without process of law, and by injunction. The compensatory remedy is an action at law for damages, the punitive remedy, an indictment on behalf of the public. To abate a nuisance is to take away, remove, or destroy the structure, object, or condition of things constituting the nuisance. In public health legislation, a nuisance is that which is injurious to health, and as health officers, this is the only feature that interests us to any great extent.

This part of our work, however, is very important, and one that requires almost constant attention during nine months of the year, from March to December. It was formerly believed that a board of health was intended simply to expose an evil and to advise the method of relief, but it has been found practically that the dangers against which a tribunal of health is needed increase rapidly with facility of communication and contact between persons, and in crowded modern conditions observation and advice are not sufficient to prolong life and to lessen disease. The finding out and the thorough suppression of all nuisances is one of the most important features of the work of the health official, in the prevention of disease. Much might be said about the different nuisances and how we dispose of them as they come to us in the country and our larger villages and cities, but only a few of them with which we are liable to come in contact as health officials and described in detail can be mentioned at this time. It is much easier to do the work now than it was ten or fifteen years ago, because the people are becoming better informed, as to the necessity of better sanitation, and the feeling that their personal rights are being interfered with is growing less. Fullness and exactness of information having been as far as possible obtained, publication of that knowledge often makes it evident how urgent is the need for relief. The simple statement of a condition makes certain conclusions inevitable, even to the public. This certainly is a step in advance, when we remember that almost all nations developed their laws concerning personal rights and the right of property long before they enacted any adequate laws for the protection of public health. It is inspiring to think of the increased influence and power which sanitary authorities have gained within a comparatively few years. The first and last step in the growth of this power has been the acquirement and the diffusion of knowledge. Having obtained satisfactory information regarding a certain condition, the next step in the work of a health department is the action which should follow the information. That some action of the powers of the health department must be taken, is evident, provided their necessity to any slight degree is once admitted. This rule applies in the suppression of nuisances, as well as in any other part of our work.

It will not be out of place at this time to talk a little about experience as well as theory. The first thing that I would mention as a nuisance is the sink drain and the cesspool, because in my village I am obliged to look after these oftener than anything else. The sink drain, as we find it among farmers, consists of a piece of lead pipe about one inch in diameter, leading from the sink out through the side of the house, or possibly down through the wall underneath the house, out on to the surface of the ground, very rarely into a cesspool. If whatever dirty water is conducted by an open spout some distance away from the buildings, and changed about from one place to another every few days, the results are not so bad as many conditions which we find in the villages. That way of disposing of the waste is preferable to cesspools that are not vented. So my plan has been to put in a trap under the sink, and to carry the water away from the buildings as far as possible, and to frequently change the direction of the conductor. In this way it ceases to be a nuisance, but when no trap is used and the fluids are allowed to soak into the ground near the buildings, it is a nuisance and must not be tolerated. Very little difficulty is experienced in making things right in these cases. In the villages where there is no system of sewerage, cesspools are used. I often find houses that are built to rent, and some, where the owner lives in the house himself, having no trap in the pipe, and leading to a cesspool well under ground without any means of escape for the gases, except into the house, by way of the sink. This condition is one of the greatest nuisances in our village. A written instrument, stating that a trap must be placed in the pipe, and the cesspool properly vented, is in most cases sufficient. If that is not enough, a second notice, stating the time when the work must be completed, or it will be done at their expense, has, in my experience, always settled the question. I have had considerable experience in this line in my own village, not having a complete system of sewerage, but have very little difficulty in bringing about the desired result. In making an examination of any premises for such purposes, I always take along at least two or three members of the local board. I find it makes quite a favorable impression on the parties interested. A much better way is to have a good system of sewerage, and avoid the nuisance, and escape the evil results that may arise from it. The next thing that I would mention as a nuisance is the water-closet outside the house. As a rule, it is too near the house, is poorly constructed, and gross negligence is seen in the care of it. Too often all the excrement is allowed to remain on the surface of the ground, and only semi-occasionally is it cleaned out. This is certainly a great nuisance, whether in a city, village, or on a farm, but if there is no system of sewerage, and no closet inside the house, connecting with a cesspool, there seems to be no better way. In our village, and so far as I can on the farms, I have a cemented box made, which, with frequent cleaning out and a free use of disinfectants, we can get along very well with, and I believe no evil will come from it. The third nuisance which I will mention is the bodies of dead animals on the surface of the ground. This does not occur very often except on the farm, where, during the winter months, a horse, cow, sheep, or calf may have died, and the carcass been allowed to remain back of the barn, in the yard, or, worse, under the barn, until it has decayed to a degree sufficient to be noticed from the highway. This is very easily disposed of, for we have only to refer them to Section 25 of Act 113 to show them that such a condition cannot longer exist without making themselves liable to prosecution. A written notice to that effect, limiting the time when such nuisance shall be disposed of will accomplish the desired result. The pigsty is one of the most disagreeable nuisances we have to deal with, for they are always too near the dwelling house, and no great effort is made to keep them in decent condition. Here again a proper notice, describing what shall be done, and when it shall be done, has been all that was needed to make things sweeter..

The last thing that I shall mention as a nuisance is garbage, which comprises all manner of waste material, and its disposal is of very great importance. The daily accumulation in towns and cities is enormous, and its removal at regular intervals is a matter of great concern to municipal administration. From a hygienic standpoint, the proper disposal of kitchen waste and other decomposable matter far outweighs in importance the removal of such material as waste paper, ashes, discarded boots and shoes, tin cans, bottles, and other rubbish, which in no way can affect the public health, but which for various reasons may not be allowed to accumulate in the household. In rural districts, the disposal of garbage in general is exceedingly simple; but in crowded communities it entails great expense, and is usually a very complicated problem. The only kind of garbage I shall mention at this time, and the one retention of which on occupied premises may be regarded as detrimental to health, is that known as kitchen refuse or swill. The methods of disposal of these matters comprise those which may be carried out by the individual householder on the spot, and those adopted by municipal authority after house-to-house collection. In country and suburban districts, kitchen waste is advantageously disposed of by feeding it in a fresh and sweet condition to swine and poultry, and depositing in the soil such matters as they will not eat. Burying in the soil is a simple and effective method of disposal, entailing but little labor, since it is best not to deposit it very deeply. Near the surface, decomposition occurs rapidly, and so a covering of earth a few inches in depth is sufficient to prevent contamination of the atmosphere with noisome odors. The methods adopted by municipal authorities comprise dumping into the lake or river, disposal to farmers for swine and poultry feeding, especially utilized as food for herds of swine kept for the purpose, and reduction and incineration in furnaces of special construction, known as destructors. It would be impossible, even if it were not unnecessary, to give in detail a description of the many varieties of machines and furnaces which have been invented for the incineration of refuse. In a good many instances such plants have been considered a nuisance, and an appeal to the courts for an abatement of the cause of discomfort has been made. Too often they are conducted from a profit-making standpoint, rather than the removal and disposal of waste as a sanitary measure. It seems to me that in the state laws for the preservation of the public health, and in the rules and regulations for the same, as promulgated by the State Board of Health, we have ample measures not only to determine when we have a nuisance, as they come to us in our respective localities, but also to abate it. All conditions which we call nuisances cannot be disposed of alike, although they may belong to the same class. Different localities require different treatment, so that no rules and regulations can be made that will suit every case, any more than we can treat all cases of typhoid fever and pneumonia alike. Intelligent health officers, as we find them among the physicians, and some others, supported by the other members of the board, with the knowledge that we are backed up by the State Board of Health, is a sufficient guarantee for any local board of health to adopt the old adage, "Be sure you are right, then go ahead." What we need to look out for is that we do not neglect to perform the duties imposed upon us along this line.

THE HOUSE, ITS DEVELOPMENT, AND RELATION TO SANITATION.

The subject of "The House, Its Development, and Relation to Sanitation" was presented by Dr. George M. Gould of Philadelphia. This was an exceedingly interesting paper. We regret that we have been unable to secure a copy for publication. However, we submit the following discussion, which will be found interesting and instructive.

Discussion by Dr. H. H. Swift, Pittsford.

After listening to this very instructive paper, I have little to say in addition. We must accept these ideas which the best men of the country give us and then do what we can to bring the homes which we come in contact with near to what these ideas are. It is rarely that I meet an adult American boy who does not accept the idea of the need of cleanliness and fresh air, and care in the restriction of disease; but we have in our midst a foreign population, who come to us from countries where they are dirty and unsanitary. In many cases these men and women are so crowded in tenements that they are as unsanitary as they can be. I call to my mind now a house I saw a few days ago. In one room, 12 x 14 feet square were four beds which were occupied by two adults; besides them there were three or four children. These men and women spoke a foreign language, so we could not reach them personally. We reached them through their children. These children went to school. Means can be provided for them to be clean. In some places where they have soiled clothing they are provided with a garment to cover up the dirty ones. The schoolhouses can be made attractive by means of pictures and plants. Another means used in the state has been the cultivation of flowers. By these means the children can be taught to be clean, and they carry these things home. The idea of cleanliness and pure air does a great deal to reach this class of foreigners.

There ought to be some legislation that would make it possible to control those overcrowded tenements in our state. I know of no way just now to reach it, but we know that whenever any good public work is going on, it will receive the proper help. A house which would accommodate six people was filled with twenty-five men and one woman to do the cooking and work. Those places cannot fail to breed and spread disease, and there ought to be some way to reach them.

Discussion by Mr. E. B. Moore, Rutland,

I want to say just one word. Many of these people are put into the homes he has described, which are owned and controlled by the people who stand for what is supposed to be the best in the world, the Christian men and women. In our town of Rutland, I know one piece of property of four house tenements, occupied precisely as the Doctor has told you, in the most unsanitary condition, and owned by a Christian woman, who spends her time in telling how to save souls and to forward money to missionaries, and she has crowded these people into the most unsanitary quarters, such as he speaks of. I say that those people don't want to be crowded into such quarters, and in view of that fact, I will say that just before I came up here one Italian came to me to complain of the surroundings, and I have begged these people to give them better quarters than they have done. A second place is owned by a Christian gentleman who spends his time advocating these missionary things, and has these people paying the most infernal rent that you can imagine.

Have you studied the economic side of the rent question? If we would go to the legislature and ask that they relieve property from taxation that is improved and tax that which is not improved, we—I think—would find that most of those that have poor pieces of property would immediately do away with it and build up new and sanitary buildings. Go up and down Church Street; look at the bank building on the corner and the hovel next door. If we taxed the hovel and not the bank building, wouldn't the hovel go out of existence? It is a question of justice only.

Discussion by George M. Gould, Philadelphia, Pa.

I have no doubt but that any boards of health or any private individual, wishing information relating to this subject, could get it by addressing the Charity Organization of New York City; they have fostered the subject of crowded tenements. Mr .Devines is the name of the man to whom you should apply, and I am sure he will give you any information regarding this subject that you desire.

THE QUESTION BOX.

Question by E. G. Moulton.

When both town grand juror and county attorney refuse to prosecute a case of violation of health laws, what can be done, providing good and sufficient evidence is produced?

Answer by O. M. Barber, Bennington.

It shall be the duty of the state's attorney of any county in which offences under this act have been committed, upon notice thereof, to prosecute the same by information before the county court, or complaint before any justice of the peace, and justices of said county shall have concurrent jurisdiction with the county court in reference thereto, and it shall be the duty of the secretary of the local boards of health of the several towns and cities in each county to report to the state's attorney of such county all violations of this act coming within his knowledge. And where in this act an action is given to recover the expenses of abating nuisances, or doing other matters and things for the promotion of the public health in which individuals and corporations are made liable for the expense thereof, the same shall be collected by action founded on this statute in the name of the city or town entitled to recover the same, and may be begun and prosecuted by the local board of health for the benefit of said city or town. Suppose they both refuse to do it, what is the remedy? You may bring your complaint to the grand juror of the county. The grand jury holds its session yearly, and may indict for the crime committed. The state's attorney shall prosecute the grand juror for failing to do his duty.

Question by E. G. Moulton.

What constitutes resisting or interfering with a health officer while doing his duty. For example, if a person willfully gives advice conflicting with a health officer's directions, misquoting laws and rules in such a manner as to hinder a health officer in his work, would that constitute a violation of the law?

Answer by O. M. Barber, Bennington.

This is very much like the law, No. 3: "Any person who shall attempt to hinder the work of a health officer or local board of health, or shall remove or deface or obscure a placard or notice posted upon an infected building, or violate quarantine regulations, shall be punished by a fine not exceeding fifty dollars, or by imprisonment for thirty days, or both, in the discretion of the court." If a person willfully gives advice, my answer is, if a person resists the health officer or interferes with him in the proper performance of his duties, he is liable under this law. The person that advises him is known as an accomplice, providing his advice causes the other person to resist the health officer, and providing it was wrongfully given or willfully, and he would be guilty as such. It would be rather difficult to secure a conviction.

Question by W. D. Whiteman, Putney.

A man in our town has a spring that is open, not stoned up, where cattle can go and drink, and dogs bathe themselves. The water supplies four families. Can a health officer legally compel him to close or stone it up? If so by what means?

Answer by O. M. Barber, Bennington.

The health officer shall make sanitary inspections whenever and wherever he has reason to suspect that anything exists which may be detrimental to the public health. He may enter any house or other building for the purpose of making such inspection. He shall, as secretary of the local board of health, by a written instrument under his hand, order the destruction, prevention and removal within a specified time, of all nuisances, sources of filth or causes of sickness as directed by the local board of health, and may, under the orders of the State Board of Health, order all churches and schools to be closed in times of epidemic or in the face of serious sickness which in his judgment may require the same, and may forbid and prevent the assembling of people in any place when the public health and safety demands the same. I take it this would be a cause of sickness, and if the secretary of the local board of health, by proper form and proper notices, orders it prevented, and if they disobey the order, the one disobeying may be punished for a violation of the laws. I don't know as he could be punished for not stoning up the well, but if it is a means of sickness, the health officer should consider it a nuisance and abate it.

Question by F. C. Kinney, Greensboro.

Greensboro has about one hundred cottages built around the shore of Caspian Lake. To what extent can the local board of health dictate and exercise control of water-closets and drains, the waters of the lake being used for household purposes by both cottagers and townspeople?

Answer by O. M. Barber, Bennington.

Before giving my answer to that question, I would respectfully ask to what extent the waters of this lake are used for household purposes by the townspeople?

F. C. Kinney, Greensboro.

There are twenty families supplied by the water in the village. There is no organized company and each man goes and helps himself.

O. M. Barber, Bennington.

How large a body of water is Caspian Lake?

F. C. Kinney, Greensboro.

Fifteen thousand acres.

O. M. Barber, Bennington.

Who owns it?

F. C. Kinney, Greensboro.

It is state water; it belongs to the state.

O. M. Barber, Bennington.

That question is not free from doubt. I do not feel at all certain that the answer I may make will be at all helpful. The State Board of Health shall have the general oversight and care of all waters, streams and ponds used by any cities, towns, villages, or public institutions, or by any water or ice companies in this state as sources of water supply, and of all springs, streams and water courses tributary thereto. It shall have power to call for and be provided with maps, plans, and documents suitable for such purposes at the expense of such city, town, village, public institution, water or ice company, and shall keep records of all its transactions relative thereto.

I would ask if any ice company gets their supply of ice from this lake?

F. C. Kinney, Greensboro.

The creamery and village people, and a couple of ice companies out of town.

O. M. Barber, Bennington.

Assuming that it is used to furnish ice, I do not see why it does not come under Act 115. So assuming whoever willfully deposits excrement, or foul, or decaying matter in water which is used for the purpose of domestic water supply, or on the shore thereof, within five rods of the water, shall be punished by fine of not more than fifty dollars, or by imprisonment for not more than thirty days; and a constable of a town or police officer of a city or village in which such water is wholly or partially situated may act within the limits of his city or town, and any executive officer or agent of a water board, board of water commissioners, public institution or water company furnishing water or ice for domestic purposes, acting upon the premises of such board, institution or company, and not more than five rods from the water, may without a warrant arrest any person found in the act of violating the provisions of this section and detain him until complaint may be made against him therefor. But the provisions of this section shall not interfere with the sewage of a city, town, village or public institution, or prevent the enriching of land for agriculture by the owner or occupant thereof. I think the authority of the health officer would be to abate the nuisance as a cause of sickness.

Question by S. H. Kent, Northfield.

Where a health officer is appointed for a town and for an incorporated village in same town, is the village liable for any part of the work done by the health officer, and if so, what portion?

Answer by O. M. Barber, Bennington.

The State Board of Health upon the recommendation of the selectmen of the towns, or the committee on health of the board of aldermen in the cities, or trustees of incorporated villages shall appoint as health officer for each town and city or incorporated village in the state such person as the selectmen of the town, or the committee on health of the board of aldermen of the city shall recommend, and the secretary shall give him a certificate of his appointment, but if such recommendation is not made by the selectmen of any town, or the committee on health of the board of aldermen of any city, within fifteen days after notice, then the State Board of Health in its discretion may appoint such health officer without such recommendation. The health officer shall be a legal voter in the town for which he acts, but no health officer shall be appointed for an incorporated village of less than 1,000 inhabitants unless the trustees of said village request such appointment in writing. If there is any provision relating to this subject in the charter of the village, it would be necessary to know that before answering the question. Assuming there is none, my answer to this question is found in Section 9 and Section 10, for the legislature contemplated that there should be but one health officer in a township. The health officer appointed by the State Board of Health with the selectmen of his town or the aldermen of the city shall constitute a local board of health for said town or city. My answer, then, is that the town itself must bear the expense.

Question.

If a dead body is found in a town, what is the health officer's duties, if any?

Answer by O. M. Barber, Bennington.

Whenever a person dies without medical attendance, the head of the household where such death occurs, or the next of kin, shall immediately notify the health officer, if there be one, otherwise a member of the local board of health, where such death occurred, who shall, after proper investigation and autopsy to determine the cause of death, if deemed necessary by him, issue a certificate of death.

Question by H. H. Wheeler, South Burlington.

An old lady dies without attendance from a doctor; evident cause of death, old age; age 83; nothing suspicious about the case. Who issues the death certificate?

Answer by O. M. Barber, Bennington.

This case brings out the same question which I have just answered, the health officer issues a certificate of death.

Question.

If we decide to hold an autopsy, has the health officer authority to go ahead and hold it without orders from a justice?

Answer by O. M. Barber, Bennington.

Where an autopsy is held it must be ordered by the selectmen; this law does not clothe the health officer with the authority.

Question.

Can a state's attorney order an autopsy?

Answer by O. M. Barber, Bennington.

I think the state's attorney may authorize an autopsy and may conduct same.

Question.

Is it necessary for the selectmen to notify the state's attorney?

Answer by O. M. Barber, Bennington.

I think so. I could not say positively. I think the statute provides that the state's attorney should be notified, but I am not certain about it. The selectmen may order an autopsy in all cases where the public good requires same.

Question.

When a person dies in one town in this state and is to be buried in another town in this state, should the certificate of death be issued in duplicate?

Answer by O. M. Barber, Bennington.

I don't know of any provision for duplicate certificates, for I see no occasion for it.

Question.

Where a report of the sanitary condition of a town or city is required to be made biennially in the month of January, which is the year for the report?

Answer by O. M. Barber, Bennington.

I think you will find that recent legislation fixed the year when the first report should be made. The law fixed the date of the first report, and it is reckoned biennially thereafter.

Question.

Does it begin with the new year or with the new health officer?

Answer by O. M. Barber, Bennington.

I cannot find any statute respecting that matter. It may be at the convenience of the health officer. He may adopt such method as best serves his convenience.

Question.

Is the sanitary condition of schoolhouses to be made and reported in the month of March to be made except on blanks received?

Answer by O. M. Barber, Bennington.

The health officer of each town and city in the state shall make under the direction of the State Board of Health a sanitary survey of each schoolhouse and other building used for public purposes, and make report each year to the State Board of Health in the month of March, and to the board of Aldermen of cities, and to each annual March meeting in towns. My answer is that those reports are required to be made whether you are supplied with blanks or not. If the board of health fail to make some provision for these blanks, it is a failure of their duty, but this does not relieve you. You are called upon to make the investigation and report your findings.

Question.

When a dead body is in a tomb or receiving vault, does it require a burial permit to bury that body in the same cemetery?

Answer by O. M. Barber, Bennington.

Any person or persons desirous of disinterring or removing the body of a human being from one cemetery to another or from one part of a cemetery to another part of the same cemetery, or from a tomb or receiving vault, elsewhere, shall first obtain a written permit from the health officer, if there be one, otherwise from a majority of the local board of health of the town or city where such dead body is interred or entombed. Such permit shall state specifically where such dead body is to be buried or entombed, and the time and manner of its removal. That answers the question in the affirmative, that it does.

Question by F. L. Holmes.

Why is it necessary for a physician to sign a removal permit issued by a health officer who is a layman? Any physician may sign such permit, whether he has any knowledge of circumstances or not.

Answer by O. M. Barber, Bennington.

The dead body of a person shall not be delivered for transportation or transported in this state except as provided in this act unless it is accompanied by a certificate signed by a physician legally qualified to practice medicine and surgery in this state, or by the attending physician if the person died out of this state, stating that such person did not die of smallpox, Asiatic cholera, typhus fever, yellow fever, diphtheria or scarlatina; and any person or corporation violating the provisions of this section shall on conviction thereof pay to the treasurer of this state a fine of not less than twenty dollars nor more than three hundred dollars. My answer is, Because the statutes so require.

Question.

Has a party a right to put sawdust and apple pumice in a stream of water that is used by families?

Answer by O. M. Barber, Bennington.

The principal of that question has already been discussed; if putting this matter into the stream constitutes a menace to the public health, it is then within the power of the health officer and he can and must abate the nuisance.

I thank you for the attention you have given me. All laws relating to the maintenance of the public health rest primarily in the right which a society has. The first right of society is to protect itself: its morals, its health and its welfare. The legislature has been enacting the fundamental principles of the common law.

DIRECTIONS FOR THE COLLECTION OF AND TRANSMISSION TO THE STATE LABORATORY OF HYGIENE OF MATERIALS FOR MEDICO-LEGAL EXAMINATION.

1. When a case of suspected poisoning occurs, the body and its surroundings should be carefully examined. In the examination of the body all external discolorations, stains, bruises and scars must be carefully noted. The appearance of the hands, lips and tongue should be the object of special attention, as many substances which cause death have a corrosive action or leave a distinctive stain. The surroundings of the body must be carefully looked over and any vial, or box, or other receptacle that may have contained a medicinal or poisonous substance should be forwarded to the Laboratory under seal.

2. The organs and materials which are to be sent to the Laboratory for chemical and pathological examination should be removed under the most cleanly conditions possible. In case of suspected poisoning of a human being the materials forwarded should include the brain, stomach, entire intestinal tract, liver, kidneys, spleen, piece of muscle from the thigh and the urine. When the bodies of domestic animals are to be examined for poisons, the stomach, liver, kidneys, urine and a sample of blood should be forwarded. In either case the organs and other materials must be sent in separate vessels. The vessels must be new and clean and no metallic coverings or stoppers of any kind may be used. These vessels should be sealed in such a manner that the covers or stoppers cannot be removed without destroying the seal or cutting the tape. No preservative should be used unless shipment is necessarily delayed and decomposition has begun. In this case, alcohol may be put in the vessels and a quart of the alcohol must be sent to the Laboratory in a separate receptacle, with the other material.

3. A clear and complete account of the sickness and death of each human being or domestic animal should be kept and a copy sent along with the materials for examination. Such things as the condition of the fæces;

whether there was a great desire for water; whether there were spasms before or at the time of death, or any other noticeable symptom, should be included in this description.

4. A careful set of notes must be taken at the time of the autopsy; and the surroundings of the body, the marks and discolorations of the body, the size of the various organs and their condition, whether normal or abnormal, should be included, together with any other information which may furnish a clue to the cause of death.

5. The examination of such organs and other materials is made free of charge under the conditions indicated in Section 4, Act No. 90, of the Legislature of 1900, which is as follows:

"SECTION 4. The use of the Laboratory, and all investigations mentioned in this Act therein made, shall be free to the people of this state. And whenever the state's attorney of any county, on the order of a judge of the Supreme Court, shall request for use in any criminal case pending in his office, an expert investigation, chemical or pathological, of any substance, such investigation shall be made at the Laboratory forthwith, without charge to the state, and the expert making such investigation shall submit the results of his work to the state's attorney at whose request it is done, and shall attend court as a witness at any place in the state when required to do so by subpœna and submit in court the results of his investigations, and shall be paid as such witness his actual expenses of attendance, when summoned by the state."

6. For more complete directions for medico-legal autopsy, see the article by M. J. Wiltse, M. D., in Bulletin No. 3, Vol. IV., of the quarterly issued by the Vermont State Board of Health. A copy of this Bulletin will be sent upon application.

Volume V. No. 3.

Issued Quarterly at Brattleboro, Vermont.

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

Paper Milk Bottles.—The many disadvantages of the glass milk bottle as now almost universally employed are well known. One of the most serious is the difficulty in securing proper cleansing before it is refilled, with the accompanying possibility of spreading infection. Efforts to secure improvement in this detail of milk service have heretofore been unsuccessful, mainly because of failure to obtain a satisfactory substitute. Recent investigations by Dr. A. H. Stewart,* of the Bacteriologic Department, Philadelphia Bureau of Health, indicate that at last a very acceptable container has been found in what he designates a single service paper milk bottle. It is made of heavy spruce wood fiber paper, conic in shape to facilitate nesting, and with an ingenious locking device to retain the bottom. An important feature of the bottle is its saturation with paraffin by being dipped in that substance at 212° F., and then baked. This sterilizes the bottle and prevents the milk coming in contact with the paper itself and adhering, as it does to the glass bottle. For shipment, the bottles are packed in nests of 20, three nests being sealed in a sterile bag; the lids are also put in sterile packages. Bacteriologic tests with sample bottles were exceedingly satisfactory. As received from the manufactory, none were found to contain micro-organisms. Closed bottles were sent to several dairies near Philadelphia, a glass bottle and a paper bottle at each being filled from the same lot of milk. When received at the bureau, the glass bottles invariably showed slight leakage around the caps, the paper bottles did not. In every instance the milk in the paper bottle contained fewer bacteria than did that in the glass bottle, the average being a fourth as many as in the latter. Certified milk in the paper bottles kept sweet two days longer than that in glass bottles. If these paper containers give such results in general use, the delivery of milk in cities bids fair to be revolutionized. They are light, tightly sealed, perfectly clean and sterile, and are to be used but once, thus doing away with all bottle washing in private houses and in milk depots. Their cost is such that they may be used without increasing the price of milk to the consumer. The subject is one that should at once be thoroughly investigated to determine if everyday use confirms these laboratory findings. If it does, a great advance has been made. Further, with the use of this bottle, it appears that the very desirable accomplishment of bottling milk at the farm may be an achievement of the near future.

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*Sanitation, December, 1904.

Vaccination.—The following opinion of the Court of Appeals of New York State, relative to the vaccination of school children, published in the Bulletin of the Connecticut State Board of Health, is worthy of wide dissemination as a judicial statement of the facts regarding vaccination:

"The appellant claims that vaccination does not tend to prevent smallpox, but tends to bring about other diseases, and that it does much harm with no good. It must be conceded that some laymen, both learned and unlearned, and some physicians of great skill and repute, do not believe that vaccination is a preventive of smallpox. The common belief, however, is that it has a decided tendency to prevent the spread of this fearful disease and to render it less dangerous to those who contract it. While not accepted by all, it is accepted by the mass of the people as well as by most members of the medical profession. It has been general in our state and in most civilized nations for generations. It is generally accepted in theory and generally applied in practice, both by the voluntary action of the people and in obedience to the command of law. Nearly every state in the Union has statutes to encourage or directly or indirectly to require vaccination, and this is true of most nations in Europe. It is required in nearly all the armies and navies of the world. Vaccination has been compulsory in England since 1854, and the last act upon the subject, passed in 1898, requires every child born in England to be vaccinated within six months of its birth. It is compulsory, or is aided, encouraged, and to some extent compelled, in the other European nations. It is compulsory in but few states and cities in this country, but it is countenanced or promoted in substantially all, and statutes requiring children to be vaccinated in order to attend the public schools have generally been sustained by the courts."

The opinion further states, that a common belief like common knowledge may be acted upon by the legislature and courts without proof, and the fact that it is not universal is not controlling, for there is scarcely any belief that is accepted by every one, and what the people believe is for the common welfare must be accepted as for the common welfare. "While we do not decide and cannot decide that vaccination is a preventive of smallpox, we take judicial notice that this is the common belief of the people of the state, and with this fact as a foundation, we hold that the statute in question is a health law, enacted in a reasonable and proper exercise of the police power."

Compulsory Vaccination of School Children.—The Supreme Court Commissioners of California say, in French vs. Davidson, that in the case of Abell vs. Clark, 84 Cal. 226, the title of the "Act to encourage and provide for a general vaccination in the state of California" was shown to be in substantial compliance with the requirements of the constitution, and many authorities were cited illustrating its sufficiency. The uniform operation of the act on a natural class of persons, to wit, school children, was asserted, and its compliance with the constitution in that behalf was declared. That the vaccination act came within the police power of the legislature of the state, and that it was for the public good, was clearly maintained by the opinion. It was also shown that the act in no way impaired any constitutional provision against special legislation. The soundness of that decision has never been questioned, so far as the commissioners have been able to ascertain. The case has been frequently cited, and the principle of it approved, both in California and in other states. The legislature, the commissioners go on to say, no doubt was of opinion that the proper place to commence in the attempt to prevent the spread of a contagion was among the young, where they were kept together in considerable numbers in the same room for long hours each day. It needs no argument to show that, when it comes to preventing the spread of contagious diseases, children attending school occupy a natural class by themselves, more liable to contagion, perhaps, than any other class that we can think of. This effort to prevent the spread of contagion in a direction where it might do the most good was for the benefit and protection of all the people, and there is in it no element of class legislation. It in no way interferes with the right of the child to attend school, provided the child complies with its provision. Police regulations generally interfere with the liberty of the citizen in one sense, but it is no valid objection to a police regulation that it prevents a person from doing something that he wants to do, or that he might do if it were not for the regulation. When it has been determined that the act is within the police power of the state, nothing further need be said. The rest is to be left to the discretion of the law-making power. It is for that power to say whether vaccination shall be had as to all school children who have not been vaccinated all the time, or whether it shall be resorted to only when smallpox is more than ordinarily prevalent and dangerous. Nor does the fourteenth amendment or any other part of the federal constitution interfere with the power of the state to prescribe regulations to promote the health and general welfare of the people.—*Journal American Medical Association.*

To Physicians.—We would call the attention of physicians to the importance of giving special attention to the filling out of birth and death certificates; first to be sure and answer every question, write plainly, remembering that the town clerk to whom the certificate goes, and who has to copy it on to the blank which the law requires him to return to the office of the secretary of the State Board of Health, is not familiar with the nomenclature of diseases, hence can only copy what he apparently finds on your certificate.

Accuracy in Reporting.—In reporting deaths from firearms, always state whether accidental, suicidal or otherwise. Also in case of accidents state the form or kind of accident, whether machinery, horse power, etc., in order that we may classify them correctly. We have to send a copy of our report to the Census Office in Washington, and we desire to have it as accurate as possible Do not give as cause of death, "dropsy," "heart failure," or "shock," but the cause that produced them. In case of nephritis, state if puerperal or otherwise. We would recommend that you write to Dr. W. R. King, Census Bureau, Washington, requesting that he send you a copy of the international classification of causes of death. Please assist the secretary in making our vital statistics accurate.

Pure Food Law.—The Legislature of 1904 passed what is known as the "Pure Food Law," a copy of which you will find on page 35 of this number of the Bulletin. It is followed by the rules and regulation formulated for its enforcement by the State Board of Health, as required by Section 18 of No. 143, Laws of 1904. As the bill does not carry any appropriation with it for the purpose of paying for the expenses of collection of specimens to be examined, the Board will be limited in carrying out the purposes of the bill; hence we ask the coöperation of all health officers in the execution of this wise law. The attention of all is called to the work contemplated by this act. It is estimated that $1,000,000 worth of adulterated foods are sold annually in this state. It is our purpose to enforce this law to the end that the people of the state shall be protected from this gigantic fraud, receiving for their money a true and just equivalent. Also to assure the purchasers in other states of Vermont products, that they may rely upon the purity of maple sugar and other Vermont productions.

Schoolhouse Report.—Health officers should not fail to report, as the law requires, to their respective towns the condition of the schoolhouses and their recommendations for placing them in proper sanitary standard, as regarding lighting, warming, ventilating, water supply and waterclosets, or outhouses.

Ventilation of Railway Cars.—The Pennsylvania Railroad Company has, after a period of experimentation, adopted a device for ventilating its passenger coaches which promises to do away, not only with bad air, but also with the overheating and underheating of the cars—three evils from which every traveler has at some time or other suffered.

The description of the device indicates that there is about it nothing that is severely complex. Outside air is brought into the car through hoods covered with wire gauze to exclude cinders, passed through vertical downtakes to a space under the floor, whence it is driven into the heater boxes and warmed by the radiators. From the heater boxes the air passes into the car proper at points in the main aisle, performs its mission and is allowed to escape through the ventilators which are provided with the necessary suction to aid the circulation of air. When all the ventilators are open, 60,000 cubic feet of fresh air is provided per hour. In a day coach this would give each passenger approximately 1,000 cubic feet of fresh air, or fifteen complete changes of air every hour. In a Pullman sleeper, the amount per passenger would be much greater. There is also a method of compensating for the difference of conditions when the car is in motion and when it is not.

The tests on the Pennsylvania have been so satisfactory that several hundred cars have already been provided with the device. If all that is claimed for the system is true, its general adoption, it would seem, cannot long be delayed, for the things that it is said to accomplish are parts of a reform long needed.

The Japanese Lesson in Military Hygiene.—Any one who has read the intensely interesting series of articles by Mr. Kennan, now appearing in the *Outlook,* which give one an insight into the wonderful preparedness and forehandedness of the Japanese in this campaign can well understand the success which accompanies their efforts in the field of military hygiene. The Japanese are apparently the first nation to recognize the true importance of the army medical corps.

In an address delivered before the Association of Military and Naval Surgeons, at St. Louis, in October, Major Louis L. Seaman, who has but recently returned from Manchuria and Japan, pointed out in a most striking way the really remarkable achievements of the Japanese medical field force in the present campaign. Major Seaman, having served as a volunteer surgeon in our war with Spain, is fully cognizant of the conditions which prevailed in that brief campaign, and from his knowledge of the conditions at present existing in the Japanese army is entitled to speak with authority. He declares that the Japanese medical officers have proved beyond doubt the preventability of typhoid fever and of dysentery.

In Manchuria, Dr. Seaman saw but three cases of typhoid fever and only an occasional case of dysentery. In his own words he declares that "the conspicuously empty beds of the great Japanese hospitals voice more eloquently than words the most important lesson of the war." Dr. Seaman tells us that the medical officer is omnipresent. Competent bacteriologists go forward with the advanced scouts, carrying the necessary apparatus for testing all sources of water supply and even labeling all contaminated springs and wells so that there shall be no danger of infection to the army from this source. The temporary hospitals are erected upon sites chosen especially with an eye to perfect sanitation and hygiene. Indeed the carefulness with which this campaign is being conducted from a purely medical standpoint would be little short of marvelous were it merely an extensive army maneuver in time of peace. In the face of existing conditions it is wonderful beyond belief.

The keynote to the whole situation is contained in the remark made by a Japanese officer of rank to Dr. Seaman. This officer said, "Every man who dies in our army must fall on the field of battle." Was there ever a more pregnant sentence uttered in the midst of a campaign for life or death. May its lesson bear fruit in all the armies of the world.

Economics of Tuberculosis.—Tuberculosis causes annually more than 150,000 deaths in the United States at the average age of 35 years. At this age the normal after-lifetime is about 32 years, so that the real loss of life covered, measured in time, is represented by 4,800,000 years per annum. If we assume that the net value of a year of human life after the age of 35 years is at least $50, the real loss to the nation resulting from the disease (a large proportion of which is known to be needless) may be estimated at $240,000,000 per annum. These astounding and almost incomprehensible figures are far from being an exaggeration; but let us assume that only one-half of this mortality is preventable, and we have a net possible saving to the nation of $120,000,000 per annum. This estimate does not take into account the social, moral and sentimental value of at least 100,000 lives, which under different conditions might reasonably hope to continue for many years. The mortality from tuberculosis is, therefore, a problem compared with which all other social problems of a medical character sink into insignificance, and it is safe to say that the possible prevention of a large portion of the mortality from this disease is justly deserving of the solicitude, the active personal interest and liberal pecuniary support of all who have the real welfare of the people of this nation at heart.

Biggs estimates that New York City sustains an annual economic loss of $23,000,000; and that the nation at large must sustain an annual loss of $330,000,000 because of tuberculosis. There are yearly 10,000 deaths from consumption in New York City. Seven thousand persons died in Illinois in 1903, half of them between the ages of 20 and 50 years, while the estimated loss to that state alone, because of this disease, was $36,000,000, and the medical authorities of that state have found that consumption is responsible for more deaths than typhoid fever, scarlet fever, diphtheria, all forms of bronchitis, influenza, measles and smallpox combined.—*New York Medical Journal.*

LAWS RELATIVE TO PURE FOOD.

Acts No. 143 and 144, Laws of 1904, Providing for the Inspection of Food, Drugs and Other Articles in Common Use, with Rules and Regulations.

No. 143, Laws 1904, an Act Providing for the Inspection of Food, Drugs, and Other Articles in Common Use.

It is hereby enacted by the General Assembly of the State of Vermont:

Section 1. No person shall sell, or offer for sale, any adulterated drug or substance to be used in the manner of medicine, or any adulterated article of food or substance to be used in the manner of food or drink, for man or domestic animals.

Sec. 2. If any drug or substance used for medicine sold under a name recognized by the United States Pharmacopoeia or in some other pharmacopoeia, or other standard work of materia medica, differs materially from the standard of strength, quality or purity laid down in such work, or contains less of the active principle than is contained in the genuine article, weight for weight, or falls below the professed standard under which it is sold, it shall be deemed to be adulterated within the meaning of this act.

Sec. 3. If any food or substance intended to be eaten or used in the manner of food or drink, contains a less quantity of any valuable constituent than is contained in the genuine article weight for weight, or contains any substance foreign to the well known article under whose name it is sold, or is colored, coated, polished or powdered, whereby damage is concealed, or contains any added poisonous ingredient, or consists wholly or partly of any decomposed, putrid, or diseased substance, or has become offensive or injured from age or improper care, it shall be deemed to be adulterated within the meaning of this act.

Sec. 4. Whoever fradulently adulterates for the purpose of sale any article of food or drink, drug or medicine, or knowingly sells any fraudulently adulterated article of food or drink, drug or medicine, or any kind of diseased or unwholesome provisions as defined in this act, shall be imprisoned not exceeding one year, or fined not more than four hundred dollars.

Sec. 5. Every person offering or exposing for sale any drug or article of food within the meaning of this act, shall furnish to any member of the State Board of Health, or any local health officer, who shall apply to him for the same and tender him its true value in money, a sample sufficient for the purpose of the analysis of such drug or article of food.

Sec. 6. Any person who has reason to doubt the purity or genuineness of any article of food which he has purchased, may send at his own expense a sealed sample of it to the Laboratory of Hygiene of the State Board of Health for inspection. If, upon examination, the article appears to be adulterated, the Board may obtain a certified sample of it, and should this sample prove to be adulterated, the board shall begin proceedings at once against the vendor.

Sec. 7. Whoever hinders, obstructs, or, in any way, interferes with any member of the State Board of Health or any local health officer in the performance of his duties under this act, shall be fined not more than fifty dollars for the first offense, and for each subsequent offense shall be fined one hundred dollars.

Sec. 8. Before commencing the analysis of a sample, the analyist shall reserve a portion, which shall be sealed; and, in case of a complaint or indictment, part of the reserved portion of the sample alleged to be adulterated shall, upon application, be delivered to the defendant or his attorney, and part to the secretary of the State Board of Health.

Sec. 9. Whoever adulterates, for the purpose of sale, any liquor used or intended for drink, with cocculus indicus, vitriol, grains of paradise, opium, alum, capsicum, copperas, laurel-water, logwood, Brazil wood, cochineal, sugar of lead, or any other substance which is poisonous or injurious to health, or knowingly sells any such liquor so adulterated, shall be imprisoned not exceeding one year, or be fined not more than one thousand dollars.

Sec. 10. Whoever kills, or causes to be killed, for the purpose of sale for food, a calf less than four weeks old, or knowingly sells, or has in his possession with intent to sell, for food, the meat of any such calf, shall be imprisoned not exceeding thirty days, or fined not more than fifty dollars, or both.

Sec. 11. The health officer of any city, town or village may inspect the carcasses of all slaughtered animals intended for food for men, and all meat, fish, vegetables, produce, fruit or provisions of any kind found in their cities or towns, and for such purposes may enter any building, enclosure or other place in which such carcasses or articles are stored, kept or exposed for sale. If, on such inspection, it is found that such carcasses or articles are designed for food for man and are tainted, diseased, corrupted, decayed, unwholesome, or from any cause unfit for food, the board of health shall seize the same and cause it or them to be destroyed forthwith, or disposed of otherwise than for food. The powers conferred in this section upon local health officers, are conferred upon any member of the State Board of Health to perform the same acts in any part of the state.

Sec. 12. Any meat, unwholesome provisions or articles sold, kept or offered for sale for food or drink for human beings, and any articles adulterated in violation of any of the preceding sections, shall be deemed a public nuisance and summarily destroyed.

Sec. 13. Every apothecary, druggist, or other person who sells any arsenic, corrosive sublimate, nux vomica, strychnine, morphine, opium, cocaine, carbolic acid or prussic acid, or its salts, shall make a record of such sale in a book kept for that purpose, specifying the kind and quantity of the article sold, and the time when, and the name of the person to whom such sale is made, which record shall be open to all health officers, members of the State Board of Health and state officials who may wish to examine the same.

Sec. 14. If a person violates the provisions of the preceding section, he shall be fined not more than one hundred dollars.

Sec. 15. The two preceding sections shall not apply to legally qualified practitioners of medicine, nor to their prescriptions or recipes to their patients.

Sec. 16. Any corporation, person, firm or agent who shall sell or offer for sale or exchange any woven fabric or paper containing arsenic in any form, or any article of dress or household use composed wholly or in part of such woven fabric or paper, or any other article of dress containing arsenic, shall, upon conviction thereof, be fined not exceeding one hundred dollars; provided, however, that this section shall not apply to dress goods or articles of dress containing not more than one-hundredth grain nor to other material containing not more than one-tenth grain of arsenic per square yard of the material.

Sec. 17. No person shall by himself, his servant or agent, or as the servant or agent of any other person or corporation, manufacture for sale, or knowingly sell or offer for sale, any candy adulterated by the admixture of terra alba, barytes, talc, or any other mineral substance, by poisonous colors or flavors or other ingredients, deleterious or detrimental to health, and the candy so adulterated shall be forfeited and destroyed under the direction of the court.

Sec. 18. The State Board of Health shall adopt such rules and regulations as it deems necessary to facilitate the enforcement of the provisions of this act, and for collecting and examining of drugs, food, liquors, and candy, articles of clothing, fabrics, wall paper or anything containing poisonous pigments or substances whereby the health of any person may be injured. Any violation of any such rule or regulation made under the provisions of this act, shall be punished by a fine of not more than five hundred dollars.

Sec. 19. If any person violates any of the provisions of this act, for which no penalty is hereinbefore provided, he shall be fined not more than one hundred dollars and not less than fifty dollars.

Sec. 20. Justices of the county shall have concurrent jurisdiction with the county court of offenses under this act, to the extent of fining the respondent fifty dollars, or may bind him over for trial by county court. Any state's attorney, grand juror or other public prosecuting officer may institute prosecutions for violations of this act.

Sec. 21. The standard of purity for food products shall be that adopted by the United States Department of Agriculture.

Sec. 22. It is hereby made the duty of the State Board of Health, or agent thereof, to bring to the notice of the proper prosecuting officer any violation of any United States statute for preventing the adulteration or misbranding of foods or drugs.

Sec. 23. Nothing contained in the preceding sections shall be so construed as to prevent the State Board of Health from issuing to a producer or manufacturer of foods or drinks a permit to use such preservatives or coloring matters as said Board may determine by analysis or otherwise are not detrimental to health.

Sec. 24. All acts or parts of acts inconsistent with this act are hereby repealed.

Sec. 25. This act shall take effect from its passage.

Approved November 11, 1904.

No. 144, LAWS 1904. AN ACT TO AMEND SECTION 18 OF AN ACT OF THE GENERAL ASSEMBLY OF 1904, KNOWN AS HOUSE BILL NO. 109, ENTITLED "AN ACT PROVIDING FOR THE INSPECTION OF FOOD, DRUGS, AND OTHER ARTICLES OF COMMON USE."

It is hereby enacted by the General Assembly of the State of Vermont:

Section 1. Section 18, of House Bill No. 109, Acts of 1904, entitled "An Act Providing for the Inspection of Food, Drugs, and Other Articles of Common Use," is hereby amended so as to read as follows:

Sec. 18. The State Board of Health shall, as soon as may be after this act takes effect, adopt such rules and regulations, not inconsistent with existing laws, as it deems necessary to facilitate the enforcement of the provisions of this act, and for the collecting and examining of drugs, foods, liquors, and candy, articles of clothing, fabrics, wall paper or anything containing poisonous pigments or substances whereby the health of any person may be injured. Said Board shall cause said rules and regulations to be printed in pamphlet form for distribution, shall furnish to each local health officer a sufficient number of copies to supply the members of the local board of health and all practicing physicians in such town, and furnish to each town clerk a sufficient number of copies for distribution under the provisions of law as to the distribution of the Acts and Resolves of the General Assembly; and it shall be the duty of said local health officers and town clerks to distribute the same. Any violation of any such rule or regulation made under the provisions of this act, after the publication and distribution of such rules and regulations, shall be punished by a fine of not more than five hundred dollars.

Approved December 7, 1904.

RULES AND REGULATIONS.

January 11, 1905.

In conformity with the requirements of Section 18 of No. 143, Laws of 1904, the State Board of Health hereby adopt the following rules and regulations to facilitate the enforcement of No. 143 and No. 144, Laws of 1904. Any violation of these rules or regulations is punishable by a fine of not more than five hundred dollars.

State Board of Health,

HENRY D. HOLTON, *Secretary.*

HONEST LABELS.

All canned and bottled goods must bear the name and address of the manufacturer or packer, and shall be labelled so as to give true information regarding the contents, and any package with a label so worded or in type of such size or color as to (intentionally) deceive the purchaser, shall be deemed an adulterated article.

ANTISEPTICS AND PRESERVATIVES.

Salicylic acid, benzoic acid, boric acid, hydrofluoric acid, sulphurous acid, and compounds of these acids—formaldehyde or formalin and various mixtures known to the trade as "Freezine," "Iceine," "Formol," "Preservatines" of various kinds, etc., are antiseptics and foods or food products containing them are adulterated, except where specifically permitted. The use of salt, sugar, vinegar, saltpetre and wood-smokes, as employed in curing meat, are not prohibited.

BAKING POWDER.

Baking powders must consist only of wholesome materials, the names of which shall be stated on the label, and shall give at least ten (10) per cent of their own weight of carbonic acid gas on addition of water.

Quantity of sample required—one-half pound in original package.

BUTTER.

Butter is the product obtained by gathering in any manner the fat of fresh or ripened milk or cream into a mass which also contains a small portion of the other milk constitutents with or without salt and shall contain not less than eighty-two and five-tenths (82.5) per cent of butter fat. Butter may contain additional coloring matter of a harmless nature.

RENOVATED OR PROCESS BUTTER.

Renovated or Process Butter is the product obtained by melting butter and reworking without the addition or use of chemicals or other substances except milk, cream or salt and shall contain not more than sixteen (16) per cent of water and must contain at least eighty-two and five-tenths (82.5) per cent of butter fat. Butter or milk fat is the fat of milk and has a Richert-Meissl number not less than twenty-four (24) and a specific gravity not less than 0.905. (40° C. / 40° C.)

Quantity of sample required—one-half pound.

CANDY.

Candy is a product prepared from a sacharine substance or substances with or without the addition of harmless coloring, flavoring or filling materials and must contain no terra alba, barytes, talc, chrome yellow, or other mineral substances or poisonous colors or flavors or other ingredients injurious to health.

Quantity of sample required—of one kind—one-half pound.

CANNED GOODS.

Canned goods must bear the name and address of the packer. If dried before packing, they must be labelled "soaked or bleached" goods in letters not less than two line pica in size. The use of peas or other vegetables greened with copper is prohibited.

Quantity of sample required—two one pound cans in original package.

CATSUPS.

Catsups are preparations of tomato pulp and spices, and must contain no added coloring material or preservatives.

Quantity of sample required—one pint in original bottle.

CHEESE.

(1) Cheese is the solid and ripened product obtained by coagulating the casein of milk by means of rennet or acids, with or without the addition of ripening ferments and seasoning. Cheese may also contain added coloring matter of harmless nature.

(2) Whole milk, or full cream, cheese, is cheese made from milk from which no portion of the fat has been removed.

(3) Skim-milk cheese, is cheese made from milk from which any portion of the fat has been removed.

(4) Cream cheese, is cheese made from milk and cream, or milk containing not less than six (6) per cent of fat.

Standard whole-milk or full cream cheese, is whole-milk or full cream cheese containing in the water-free substance, not less than fifty (50) per cent of butter fat.

Quantity of sample required—one-half pound. Fancy cheeses in original package—an amount approximating one-half pound.

CHOCOLATE.

Chocolate, plain or bitter, or chocolate liquor, is the solid or plastic mass obtained by grinding cocoa nibs without the removal of fat or other constituents, except the germ, and must contain not more than three (3) per cent ash insoluble in water, three and one-half (3½) per cent of crude fibre and nine (9) per cent of starch, not less than forty-five (45) per cent of cocoa fat.

Quantity of sample required—one-half pound in original package.

SWEET CHOCOLATE AND CHOCOLATE COATINGS.

Sweet chocolate and chocolate coatings are plain chocolate mixed with sugar (sucrose), with or without the addition of cocoa butter, spices or other flavoring materials, and should contain in the sugar and fat-free residue no higher percentage of either ash, fibre or starch, than is found in the sugar and fat-free residue of plain chocolate.

Quantity of sample required—one-half pound in original package.

CIDER.

Cider is the unfermented juice of the apple. Any substitute for apple juice or any added antiseptic constitutes an adulteration.

Quantity of sample required—one pint.

COCOA.

Cocoa or powdered cocoa is cocoa nibs with or without the germ, deprived of a portion of its fat and finely pulverized, and contains percentages of ash, fibre and starch corresponding to those in chocolate after correction for fat removed. Sweet or sweetened cocoa is cocoa mixed with sugar (sucrose) and must contain not more than sixty (60) per cent of sugar (sucrose) and in the sugar and fat-free residues no higher percentage of either ash, crude fibre or starch than is found in the sugar and fat-free residue of plain chocolate.

Quantity of sample required—one-half pound in original package.

COFFEE.

Coffee must be true to name. It must not be coated or polished to conceal inferiority.

Quantity of sample required—one-fourth pound.

COFFEE COMPOUNDS.

Mixtures of cereals or other articles sold as substitutes for coffee must be sold as a mixture or compound under an original or coined name, and not under the name of any ingredient thereof, and must state exact composition of mixture.

Quantity of sample required—one original package.

CREAM.

Cream is that portion of milk, rich in butter fat, which rises to the surface of milk on standing, or is separated from it by centrifugal force, and must contain not less than eighteen (18) per cent of milk fat. Evaporated cream is cream from which a considerable portion of the water has been evaporated.

Quantity of sample required—one pint.

FLAVORING EXTRACTS.

Bottles or packages containing extracts must bear the name and address of the manufacturer.

Lemon extract shall contain at least five (5) per cent of the pure oil of lemon dissolved in ethyl alcohol.

Vanilla extract shall be made wholly from vanilla bean and shall contain no artificial coloring. When other flavoring substances are used, such as vanillin, coumarin or tonka, the extract shall be labeled so as to show its true character. The label "Compound Extract of Vanilla" will not be deemed sufficient notice of the composition of the article.

Quantity of sample required—four ounces; preferably two two-ounce bottles.

FLOUR.

Flour must be composed entirely of one ground cereal. The admixture of other flours or materials constitutes an adulteration.

GLUTEN FLOUR.

Gluten flour is flour from which the starch has been washed, wholly or in part, and must contain at least thirty (30) per cent proteids calculated by multiplying the nitrogen content by the factor 6.25 and not over forty-eight (48) per cent of starch.

Quantity required—one-half pound.

FRUIT JELLIES, JAMS, PRESERVES, ETC.

Fruit jellies, fruit butters, preserves, canned fruits, fruit conserves, confections, fruit juices and syrups, etc., must consist of the fruit specified on the label, preserved only with cane sugar, with or without the addition of glucose, and must not contain artificial flavors, coloring matters or preservatives. If such articles contain any substitute for the fruit, or any injurious material to make up bulk or weight, any artificial flavor, color or antiseptic, or any substance not naturally occurring in such fruit, except spices or other wholesome natural flavoring materials, they shall be considered to be adulterated.

Quantity of sample required—two tumblers, or an equivalent amount, in original package.

HONEY.

Honey is the nectar of flowers and saccharine exudations of plants gathered by bees. Honey made by feeding bees glucose, sugar syrup or other saccharine substance, is not pure honey. Adding glucose sugar or syrup to honey; or substituting these materials for honey constitutes an adulteration.

Quantity of sample required—"Strained" a container with at least one-half pound net weight in original package.

LARD.

Lard is the rendered fresh fat from healthy slaughtered hogs. Leaf lard is the lard rendered at moderately high temperature from the internal fat of the abdomen of the hog, excluding that adherent to the intestines. Standard lard and standard leaf lard are lard and leaf lard respectively, free from rancidity, containing not more than one (1) per cent of substances, other than fatty acids, not fat, necessarily incorporated therewith in the process of rendering, and standard leaf lard has an iodine number not greater than sixty (60).

Quantity of sample required—one-half pound.

MILK.

(1) Milk (whole milk) is the lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that obtained within fifteen days before and five days after calving, and should contain not less than twelve (12) per cent of total solids and not less than eight and one-half (8.5) per cent of solids not fat, nor less than three and one-fourth (3.25) per cent of milk fat.

(2) Blended milk, is milk modified in its composition so as to have a definite and stated percentage of one or more of its constituents.

(3) Skim milk, is milk from which a part or all of the cream has been removed, and must contain not less than nine and a quarter (9.25) per cent of milk solids.

Quantity of sample required—one pint.

(4) Condensed milk, is milk from which a considerable portion of water has been evaporated.

(5) Sweetened condensed milk, is milk from which a considerable portion of water has been evaporated and to which sugar (sucrose) has been added. Standard condensed milk and standard sweetened condensed milk are condensed milk, respectively, containing not less than twenty-eight (28) per cent of milk solids, of which not less than one-fourth is milk fat.

Quantity of sample required—one original package.

MAPLE SUGAR.

Maple sugar is the solid product resulting from the evaporation of maple sap.

Quantity of sample required—one-half pound.

MAPLE SYRUP.

Maple syrup is a syrup obtained by the evaporation of maple sap or by the solution of maple concrete.

The chief element of value in maple sugar and maple syrup is the maple flavoring and any admixture of other sugars is an adulteration.

Quantity of sample required—one pint in original package.

MOLASSES.

Molasses is the product left after separating the sugar from massecuite, melada, mush-sugar, or concrete, and must contain not more than twenty-five (25) per cent of water nor more than five (5) per cent of ash.

Syrup is the product obtained by purifying and evaporating the juice of a sugar producing plant without removing any of the sugar, and a standard syrup must contain not more than thirty (30) per cent of water, nor more than two and five-tenths (2.5) per cent of ash.

Quantity of sample required—one pint.

OLEOMARGARINE.

Oleomargarine, butterine or kindred compounds or mixtures of these with butter, cannot lawfully be sold if colored in imitation of butter.

Quantity of sample required—one-half pound.

OLIVE OIL.

Olive Oil is the expressed oil of the olive. The substitution of other oils or fats for olive oil, either in part or in whole, constitutes an adulteration.

Quantity of sample required—one pint.

MANUFACTURED MEATS.

Manufactured meats must bear names descriptive of the composition, and when bearing such descriptive names, if force or flavoring meats are used, the kind and quantity thereof must be made known.

SAUSAGE.

Sausage must be prepared from the properly prepared edible parts of animals, and must contain no preservative other than sugar, salt, saltpetre, smoke, condiments, and no artificial coloring matter.

Quantity of sample required—one-half pound.

SPICES.

Spices are aromatic vegetable substances used for the seasoning of food, and should be composed of the sound spice true to name from which no portion of any volatile oil or other flavoring principle has been removed.

All spices must be pure. Any admixture of any foreign article with any spice is an adulteration. Allspice or pimento is the dried fruit of Pimento officinalis Lindi and must contain not less than eight (8) per cent of quercitannic acid; not more than six (6) per cent of total ash; not more than five-tenths (0.5) per cent of ash insoluble in hydrochloric acid, and not more than twenty-five (25) per cent of crude fibre.

Cayenne pepper or cayenne is the dried, ripe fruit of Capsicum fastigiatum DC., Capsicum frutescens L., Capsicum baccatum L., or some other small-fruited species of Capsicum. Standard cayenne pepper must contain not less than fifteen (15) per cent of non-volatile ether extract; not more than six and five-tenths (6.5) per cent of total ash; not more than five-tenths (0.5) per cent of ash insoluble in hydrochloric acid; not more than one and five-tenths (1.5) per cent of starch by the diastase method, and not more than twenty-eight (28) per cent of crude fiber.

Cinnamon is the dried bark of any species of the genus Cinnamonum from which the outer layers may or may not have been removed and must contain not more than eight (8) per cent total ash and not more than two (2) per cent of sand.

Cassia is the dried bark of the Cinnamonum other than the Cinnamonum Zeylancium, from which the outer layers may or may not have been removed, and must contain not more than eight (8) per cent of total ash, and not more than two (2) per cent of sand.

Cloves are the dried flower buds of Eugenia caryophyllata, Thumb which contain not more than five (5) per cent of clove stems. Standard cloves must contain not less than ten (10) per cent of volatile ether extract; not less than twelve (12) per cent of puercitannic acid; not more than eight (8) per cent of total ash; not more than five-tenths (0.5) per cent of ash insoluble in hydrochloric acid, and not more than ten (10) per cent of crude fiber.

Ginger is the washed and dried, or decorticated and dried, rhizomo of zingiber officinale Roscoe and must contain not less than forty-two (42) nor more than forty-six (46) per cent of starch by direct inversion; not more than eight (8) per cent of crude fiber; not more than eight (8) per cent total ash; not more than one (1) per cent of lime, and not more than three (3) per cent of ash insoluble in hydrochloric acid.

Limed or bleached ginger is whole ginger coated with carbonate of lime conforming in other respects to standard ginger.

Mace is the dried arillus of Myrsistica fragrans Houttuyn and must contain not less than twenty (20) nor more than thirty (30) per cent of non-volatile ether extract; not more than three (3) per cent total ash; not more than five-tenths (0.5) per cent of ash insoluble in hydrochloric acid and not more than ten (10) per cent of crude fiber.

Ground mustard is a powder made from mustard seed, with or without the removal of the hulls and a portion of the fixed oil, and must contain not more than two and five-tenths (2.5) per cent of starch by the diastase method and not more than eight (8) per cent of total ash.

(A preparation of mustard, vinegar, spices and enough filler of starch to make a mustard of mild flavor to meet a legitimate demand which undoubtedly exists, may be sold as French mustard or prepared mustard.)

Nutmeg is the dried seed of Myristics fragrans Houttuyn, deprived of its testa and with or without a thin coating of lime, and must contain not less than twenty-five (25) per cent of non-volatile ether extract nor more than five (5) per cent of total ash; not more than five-tenths (0.5) per cent of ash, soluble in hydrochloric acid and not more than ten (10) per cent of crude fiber.

Black pepper is the dried immature berries of Piper nigrum L., and must be free from added pepper shells, pepper dust and other pepper by-products, and containing not less than six (6) per cent of non-volatile ether extract, not less than twenty-two (22) per cent of starch by the diastase method; not less than twenty-eight (28) per cent of starch by direct inversion; not more than seven (7) per cent total ash nor more than two (2) per cent of ash insoluble in hydrochloric acid, and not more than fifteen (15) per cent crude fiber. One hundred parts of the non-volatile ether extract contain not less than three and one-quarter (3.25) parts of nitrogen.

White pepper is the dried mature berries of Piper nigrum L., from which the outer coating, or the outer and inner coatings, have been removed, and must contain not less than forty (40) per cent of starch by direct inversion; not less than four (4) per cent total ash; not less than five (5) per cent of ash insoluble in hydrochloric acid and not more than five (5) per cent crude fiber. One hundred parts of the non-volatile ether extract contain not less than four (4) parts of nitrogen.

Quantity of sample required—four ounces in original package.

SUGAR.

Sugar is the product chemically known as sucrose (saccharose) chiefly obtained from sugar cane, sugar beets, sorghum, maple or palm. Standard sugar is white sugar containing at least ninety-nine and five-tenths (99.5) per cent of sucrose.

Starch or grape sugar is the solid product obtained by hydrolyzing starch or a starch-containing substance until the greater part of the starch is converted into dextrose. Starch sugar or grape sugar appears in commerce in two forms, anhydrous and hydrous. In the former the sugar is crystallized without water of crystallization; in the latter, it is crystallized with water of crystallization. The hydrous varieties are commonly known as 70 and 80 sugars; 70 sugar is also known as brewers' sugar, and 80 sugar as climax or acme sugar.

Standard 70 sugar or brewers' sugar is hydrous starch sugar containing not less than seventy (70) per cent of dextrose and not more than eight-tenths (0.8) per cent of ash.

Standard 80 sugar, climax or acme sugar, is hydrous starch sugar containing not less than eighty (80) per cent of dextrose and not more than one and one-half (1.5) per cent of ash.

Standard anhydrous grape sugar is anhydrous grape sugar containing not less than ninety-five (95) per cent of dextrose without water of crystallization and not more than eight-tenths (0.8) per cent of ash.

The ash of these standard products consists almost entirely of chlorids and sulphates of lime and soda.

Glucose, mixing glucose, or confectioners' glucose is a thick syrupy substance obtained by incompletely hydrolizing starch or a starch-containing substance, decolorizing and evaporating the product. It is found in various degrees of concentration, ranging from forty-one (41) to forty-five (45) degrees Baume at a temperature of 100 degrees F. It must conform in density within these limits to the degree Baume it is claimed to show and for a density of forty-one (41) degrees Baume, contains not more than twenty-one (21) per cent of water and for a density of forty-five degrees Baume not more than fourteen (14) per cent. It contains on a basis of forty-one (41) degrees Baume not more than (1) per cent of ash, consisting chiefly of chlorids and sulphates of lime and soda.

Glucose syrup, or corn syrup, is glucose unmixed or mixed with syrup or molasses containing not more than twenty-five (25) per cent of water and not more than three (3) per cent of ash.

Quantity of sample required—one-half pound.

TEAS.

Tea consists of the dried leaves of the true tea plant, without addition of artificial coloring matter or filler, or extraction of essential properties. Any article offered for tea which does not conform to this definition is adulterated.

Quantity of sample required—one-half pound.

VINEGAR.

Vinegar shall contain no artificial coloring matter, and shall have an acidity equal to the presence of not less than four and one-half (4.5) per cent by weight of absolute acetic acid. Cider vinegar shall, in addition, contain not less than two (2) per cent by weight of cider solids. If vinegar contains any artificial coloring matter, or less than the required amount of acidity, or if cider vinegar contains less than the required amount of acidity or cider vinegar solids, it shall be deemed to be adulterated.

Quantity of sample required—one pint.

ALCOHOLIC BEVERAGES.

Quantity of sample required—one pint.

OYSTERS.

Quantity of sample required—one-half pint.

Any substance, other than those heretofore provided for, that is intended to be eaten or used in the manner of food or drink, shall have the standard of purity adopted by the United States Department of Agriculture.

Any drug or substance to be used for medicine shall be of the standard recognized by the United States Pharmacopea or other Pharmacopea or other standard works of Materia-Medica.

Securing of Samples for Examination.

Agreeable to Section 5 of No. 143, Laws of 1904, any local health officer, when so requested by the Secretary of the State Board of Health, shall procure a sample of any drug, article of food, or other substance, specified in said act, and forward to the State Laboratory, securely sealed. He shall also fill out the blank furnished by the State Board of Health for the purpose, and forward to the Secretary, together with a statement of money paid out for such sample. For each single sample so sent to the Laboratory, the local health officer shall receive the sum of twenty-five cents, for each additional sample the sum of ten cents, in addition to the sum he pays for the sample.

Attention is called to Section 6 of No. 143, relative to individuals sending samples.

A SAFE, EFFICIENT AND SIMPLE WAY OF DISINFECTING WITH FORMALDEHYDE.

The State Board of Health of Maine, after careful experimentation, recommended its use by issuing a circular, of which the following is an extract:

"A long series of experiments in the Laboratory of Hygiene have developed the fact that formaldehyde may successfully and very conveniently be used in the disinfection of rooms with the use of no lamps, generators, or other special apparatus whatever. In the process which has been employed in this work, formaldehyde gas is liberated by pouring formaldehyde upon permanganate of potassium. At ordinary room temperatures a chemical reaction results whereby a high degree of heat is evolved. This heat causes an effervesence or boiling and formaldehyde gas is given off very rapidly.

"The advantages of this method are that the disinfector need not transport apparatus from place to place; that there is no generator or lamp which might originate a fire; that almost the whole quantity of formaldehyde available for disinfection is liberated in a few moments, thus giving the maximum concentration of the gas before there has been time for leakage of the part first evolved; that, through the action of the heat liberated by the chemical reaction, a sufficient quantity of steam goes off with the formaldehyde to ensure efficient disinfection.

"In the experimental work which has been done to determine the value of this 'permanganate process' of liberating formaldehyde, it was sought to have the conditions as nearly as possible like those which the health officer finds in the actual work of disinfection. Most of the work was done in a French tenement in which the rooms varied in size from about 500 cubic feet of air space to more than 1,800 cubic feet. These rooms were decidedly loose in construction, no pains were taken to paste up or otherwise close the cracks and crevices, and no artificial means were employed for distributing the gas.

"The test-bacteria used in the experiments were diphtheria, typhoid, albus, aureus, coli, pyocyaneus, tetragenus, streptococci, anthrax, subtilis, and mixed cultures mostly from swabs from the throats of patients thought to have diphtheria. The time of exposure was at first 16 hours, but this was gradually reduced to three hours with no lessening of efficiency.

"Of the 1,529 test objects exposed only 27 showed a growth after incubation for at least 48 hours. Of these 27 unsuccessful results, 21 were with the exceedingly resistant hay bacillus (B. subtilis). None of the bacilli of diphtheria, typhoid fever, or other ordinary pathogenic germs survived the exposure of formaldehyde.

"In carrying out this process of disinfection the requisites are simply the ordinary so-called 40 per cent formaldehyde solution, commercial permanganate of potassium and a vessel to mix them in.

"The required quantity of permanganate for each pint of formaldehyde solution is 6½ ounces. The permanganate is first put into the dish and the formaldehyde solution is then poured upon it. *The permanganate must go in first.* Before the mixture is made, everything must be in readiness, because a rapid flight from the room must be made. Leave the room closed up tightly four hours.

*"The vessel in which the permanganate and formaldehyde are to be mixed should be of considerable size, else the vigorous foaming will throw a part of the mixture upon the floor. A flaring ten-quart tin pail is a suitable and large enough vessel unless more than three pints of formaldehyde are to be used, and even then, until the disinfector is well acquainted with this process, it would be a safe precaution to set the pail inside of a large pan. In this, as in all methods of chemical disinfection, the disinfectant action is more efficient the warmer the room.

"As in disinfecting with formaldehyde, a large quantity of formaldehyde and a shortened time of exposure are more efficient than a smaller quantity of formaldehyde and a lengthened period of exposures, the State Board of Health advises the use of two pints of formaldehyde for each 1,000 cubic feet of space. This is a considerably larger quantity than has generally been used; but as compensatory of the increased expenditure for formaldehyde there are the advantages of not being encumbered with generators, absence of solicitude about fire, shortened time, and still more important, a very effective process for using formaldehyde.

"As it is necessary to adjust pretty carefully the relative quantities of permanganate and formaldehyde, and it is much more convenient to measure the permanganate than to weigh it, arrangements can be made with some of the druggists to keep in stock a small tin measure holding 3¼ ounces of permanganate, 'strick' measure. The rule is: for each 500 feet of room space to be disinfected, one measureful of permanganate and one pint measureful of formaldehyde."

The New Hampshire health officials have tested this method of disinfection, and in the last issue of their bulletin say:

"Especially severe tests were made with the diphtheria bacillus. Some of these germs, packed in clothing, pockets, etc., and culture in which there were vigorous growths of this bacillus, with the cotton stoppers slightly loosened, were placed in the room in which the experiments were made, and in every instance the disinfection was complete.

"These experiments substantiate the claim that with this method the gas has considerable penetrating power. In all these trials only half as much formaldehyde and permanganate of potash per 1,000 feet was used as is recommended in the circular referred to. The effective action must be greatly increased over other processes by reason of the extremely rapid evolution of the formaldehyde gas by this method. We commend its use to local boards of health, and at the same time emphasize the necessity of doing the work exactly in accordance with instructions."

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*The local Health Officer of Brattleboro has had constructed a generator as suggested by the Maine State Board, which he has found convenient and satisfactory. It is made of tin, is 10 inches in diameter, and the sides rise to a perpendicular height of 8 inches. These sides are wrapped with asbestos paper so as to retain all possible heat. Above the height mentioned the sides flare out like a funnel at an angle of about 50 or 55 degrees, and rise to a perpendicular height of 9 inches above their junction with the straight walls below. This funnel part of the apparatus can be made to detach from the bottom, and the latter can be packed into the former for transportation. Such an apparatus has a slight advantage over the other forms, as it distributes the gas quicker, prevents polymerization, and loss of heat by radiation.

THE FOLLOWING DISEASES ARE TO BE REPORTED BY PHYSICIANS TO HEALTH OFFICERS, AND FROM HEALTH OFFICERS TO THE SECRETARY OF THE STATE BOARD.

Typhoid (enteric) fever.
Typhus (ship) fever.
Smallpox (variola, varioloid).
Chicken-pox (varicella).
Measles (rubeola, morbilli).
Scarlet fever (scarlatina, canker-rash).
Whooping cough (pertussis).
Diphtheria (croup, membranous croup).
Cholera (Asiatic cholera, epidemic cholera).
Yellow fever.
Bubonic plague.
Mumps (epidemic parotitis).
German measles (rotheln).
Glanders.
Hydrophobia (rabies).
Epidemic cerebro-spinal meningitis (spotted fever).
Pneumonia (lobar or croupous pneumonia).
Puerperal fever (puerperal septicæmia).
Epidemic dysentery.
Erysipelas.
Leprosy.
Tetanus (lock-jaw).
Anthras.
Actinomycosis.
Tuberculosis.*

***Physicians are required to report every case of tuberculosis to the Secretary of the State Board within one week after it comes under their observation. This is to prevent local complications and to ensure the patient being supplied with proper information regarding the disposal of sputum and such general care as will prevent communicating the disease to others. See No. 117, Laws of 1902.**